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EDITORIAL

NUCLEIC ACIDS RESEARCH ANNUAL WEB SERVER ISSUE IN 2013

The 2013 Web Server Issue of Nucleic Acids Research is the 11th in a series of annual special issues dedicated to web-based software resources for analysis and visualization of molecular biology data. It is freely available online under NAR's open access policy. The present issue reports on 95 web servers.

Topics

This year's special emphasis is on network and pathway analysis, high-throughput sequencing data analysis and biological text mining. A total of 11 articles deal with these topics. The major topic categories include analysis involving DNA and RNA (14 articles), genes and genomes (10 articles) and protein structure, protein ligand binding, docking and functional site prediction (30 articles).

The 2013 Web Server issue continues the presentation of two special categories, one for stand-alone programs that analyze high-throughput data, such as next-generation sequencing data and one for large collections of web services for automated analyses that can be used programmatically rather than through manual interaction with a web browser. Four articles fall in these categories.

Instructions for Submissions

To streamline the review process, authors are required to send a one-page summary of their web server to the editor, Dr Gary Benson (narwbsrv@bu.edu), for pre-approval before manuscript submission. For the 2013 issue, 293 summaries were submitted and 129, or 44%, were approved for manuscript submission. Of those approved, 95, or 73%, were ultimately accepted for publication.

Review of a summary includes evaluation of the proposal and extensive testing of web server functionality. The key criteria for pre-approval are high scientific quality, wide interest, the ability to do computations on user-submitted data and a well-designed, well-implemented and fully functional Web site. Note that there is a minimum 2-year interval before publication in the Web Server issue for web servers, or essentially similar web servers, that have been the subject of a previous publication, including publication in journals other than NAR.

With respect to the Web site, the following are guidelines for approval.

(1) It should have an easy-to-find submission page with a simple mechanism for loading test data and setting test parameters. The preferred method is one-click loading. Additional mechanisms that assist the user in submitting data should be implemented where appropriate. For example, automatic download of a pdb structure file once the user has entered the appropriate identifier.
(2) Output should be dynamic and rich in detail. Wherever possible, supporting evidence used in calculations and/or links to external databases containing additional information should be provided. Numerical, textual and visual output should be mixed and any visualization tools that add information or increase the user's understanding should be used. Note that output consisting merely of a few numerical values, a static spreadsheet or a series of files to be opened in other programs will not be approved.
(3) Web servers that do not finish their calculations immediately must implement a mechanism for returning results to the user. Notification by email may be provided as an option, but an alternative that returns a web link at the time of data submission, which the user can then bookmark and access at a later time, is required. This link should ideally report the status of the job (queued, running, finished). Web sites that use a guest login will not be approved. Note that uploaded data and the results of analysis for each user must be private and not viewable by other users.
(4) The Web site should be supported by an extensive help section or tutorial that guides the user through the submission process, contains details about input file formats and parameters, and importantly, explains the meaning of the output. Whenever possible, the help pages should link to dynamic output examples similar to those provided by the Web site. Text and figure help pages rather than video tutorials are preferable because of the ease of quick lookup.
(5) Any proposal for a web server that is 'predictive' must include details on validation of predictions from new data not used in training. N-fold cross validation methods will not be considered sufficient. Details should include size and composition of the validation data set (number of positive and negative cases), and several measures of predictive performance, including sensitivity, specificity and precision. Proposals are frequently rejected for lack of adequate prediction validation information.
(6) Web sites not clearly designed to accept and analyze user-submitted data will be rejected. This applies to those established primarily for lookup or exploration in a data set, or serve the function of 'data aggregators'. Authors of

Figure 1. Allyson Byrd, Joe Perez-Rogers and Chetanya Pandya, students in the Boston University Bioinformatics Graduate Program, helped with testing of the Web Server proposal Web sites.

Web sites that provide novel data should consider the NAR Database Issue as a possible venue (see the instructions at http://www.oxfordjournals.org/our_journals/nar/for_authors/msprep_database.html).

(7) Proposals that describe a new analysis method are generally not appropriate for the Web Server issue because limited space makes adequate method description and validation problematic. Authors of such methods might instead consider sending their manuscript to NAR as a regular computational biology article (see the instructions for authors at http://www.oxfordjournals.org/our_journals/nar/for_authors/criteria_scope.html#Computational%20Biology).

Special Emphasis for 2014

For the 2014 issue, the topics of special emphasis will be tools for synthetic biology design, analysis of high-throughput sequencing data, network and pathway analysis and biological text mining.

Deadlines for 2014

Authors wishing to submit manuscripts for the 2014 Web Server issue must submit their one-page proposal along with the URL address of the fully functional Web site to narwbsrv@bu.edu by 31 December 2013. Detailed instructions and requirements are presented at http://www.oxfordjournals.org/nar/for_authors/submission_webserver.html. This information should be consulted before sending in the summary. The deadline for submission of articles is 31 January 2014.

Requirement for References Links

Manuscripts submitted for the 2014 issue must format their References section to include active links to electronic versions of the cited articles, including links to PubMed, PubMed Central and a DOI link. Instructions for incorporating these links into the manuscript are presented at http://www.oxfordjournals.org/nar/for_authors/submission_webserver.html.

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Gary Benson
Executive Editor
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